Amino Acid Perovskite Solar Cells

Do amino acids affect perovskite solar cells?
Furthermore,the additives inhibit the decomposition of the perovskite layer,stabilizing the interface structure and enhancing the stabilityof perovskite solar cells. Density functional theory calculations were used to investigate the passivation effect of the two amino acids on the perovskite.

Can amino acid salts improve the moisture stability of planar-structure perovskite solar cells?
Herein, we report an attempt to improve the moisture stability of planar-structure perovskite solar cells (PVSCs) using amino acid salts with a p-conjugated benzene ring, such as p -aminobenzoic acid iodide (PABA?HI), as a crosslinker.

Can amino acids be used to passivate perovskite films?
In this study, we propose the use of two multifunctional amino acid molecules, 2-ACL and 3-ACL, as additives to passivate perovskite films. The amino and carboxyl groups of these molecules interact strongly with the perovskite, effectively passivating defects at grain boundaries.

How efficient are n-i-p perovskite solar cells?
Consequently,n-i-p perovskite solar cells achieve a power conversion efficiency (PCE) of 24.1%with a high fill factor of 82.9%. The PL-Glu-modified device maintained 92% of the initial PCE after 2700 hours under nitrogen. This study provides a novel engineering strategy for simultaneously optimizing perovskite absorbers and interfaces.

What factors affect the power conversion efficiency and stability of perovskite solar cells?
The power conversion efficiency and stability of perovskite solar cells are affected by multiple factors,including the properties of the perovskite layers,interfaces,and transport layers. In this study,we propose the use of two multifunctional amino acid molecules,2-ACL and 3-ACL,as additives to passivate perovskite films.

Does alkylamine enhance the performance of WBG perovskite solar cells?
However,such WBG perovskite solar cell (PSC) suffers from inferior crystallinity,huge voltage loss and poor photostability. Herein,we report a amino-acid-type alkylamine,5-aminolevulinic acid hydrochloride (ALH) additive to address these issues to enhance the performanceof WBG PSCs.

24, 25 For example, Hu and co-authors employed natural amino acids as defect passivation agents in perovskite cells and achieved a high PCE of 20.49% with improved stability. 26 In this study, we ...

Here, a natural amino acid, phenylalanine (Phe), is introduced to regulate the nucleation and crystal growth process of the large-scale coating of FA-based perovskite films. Better film coverage and larger grain sizes are ...

Amino Acid Perovskite Solar Cells

Carbon-based and hole-transporting-material-free perovskite solar cells (PSCs) are a promising alternative structure for low-cost applicable method to their manufacturing. However, in this technology, the presence of 5-ammonium valeric acid iodide (5-AVAI) as co-cation to the commonly used MAPbI3 perovskite is necessary which promotes the crystal ...

Additive engineering is emerging as a powerful strategy to further enhance the performance of perovskite solar cells (PSCs), with the incorporation of bulky cations and amino acid (AA) derivatives being shown as a promising strategy ...

The performance of planar perovskite solar cells (PSCs) is closely linked to the charge extraction and transfer in electron transporting layers (ETLs). To achieve a good control of the photoelectric properties of TiO2 ETLs, we introduce amino ...

Here, we utilize a reductive natural amino acid, N -acetylcysteine (NALC), to stabilize the precursor solution for printable carbon-based hole-conductor-free mesoscopic ...

However, perovskite film based on the solution method inevitably have a large number of defects at the interface. In this paper, a biocompatible potassium amino acid salt was introduced into carbon-Based all-Inorganic perovskite ...

Perovskite solar cells (PSCs) have made unprecedented progress in improving power conversion efficiency in the past decade, and they are considered as one of the most promising photovoltaic ...

Carrier recombination at the interfaces of perovskite solar cells (PSCs) has always been one of the main limitations of device performance. How to restrain the generation of defect state on the perovskite film surface and improve the carrier extraction efficiency are crucial to break the bottleneck. Herein, the influence of an amino acid-based N-(9 ...

Consequently, n-i-p perovskite solar cells achieve a power conversion efficiency (PCE) of 24.1% with a high fill factor of 82.9%. The PL-Glu-modified device maintained 92% of the initial PCE after 2700 hours under ...

It has been reported that an overlayer of lower dimensional perovskite can effectively improve the properties of 3D perovskite solar cells. Here, 4-aminobutyric acid (C4I) and 6-aminocaproic acid iodides (C6I) are ...

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